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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,164	04/24/2006	Jean-Luc Walem	0540-1043	9431
466	7590	10/30/2007	EXAMINER	
YOUNG & THOMPSON			GIARDINO JR, MARK A	
745 SOUTH 23RD STREET				
2ND FLOOR			ART UNIT	PAPER NUMBER
ARLINGTON, VA 22202			4113	
			MAIL DATE	DELIVERY MODE
			10/30/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/560,164

**Applicant(s)**

WALEM, JEAN-LUC

**Examiner**

Mark A. Giardino

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 April 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Drawings***

New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because of French labels and unfamiliar translations, such as 'dialogue' for 'bus'. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

### ***Specification***

The abstract of the disclosure is objected to because of the legal phraseology "said". Correction is required. See MPEP § 608.01(b).

The disclosure is objected to because of the following informalities: on page 7, the word 'octet' would be unfamiliar to those of ordinary skill in the art, the word 'byte' is suggested instead; on pages 8 and 9, the word 'dialogue' would be unfamiliar to those of ordinary skill in the art, the word 'bus' is suggested instead; on page 8, the abbreviation 'Ko' would be unfamiliar to those of ordinary skill in the art, the abbreviation 'KB' is suggested instead.

Appropriate correction is required.

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

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As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.

(b) CROSS-REFERENCE TO RELATED APPLICATIONS.

(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.

(d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.

(e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.

(f) BACKGROUND OF THE INVENTION.

(1) Field of the Invention.

(2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.

(g) BRIEF SUMMARY OF THE INVENTION.

(h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).

(i) DETAILED DESCRIPTION OF THE INVENTION.

(j) CLAIM OR CLAIMS (commencing on a separate sheet).

(k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-6, and 13, and 15-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Hilditch (US 5,737,763).

Regarding Claim 1, Hilditch teaches a process for management of a digital storage unit divided into sectors, especially in view of its backup, comprising:

- creating a first table, each element of which corresponds to one sector of the storage unit (see Figure 2 and Column 2 Lines 55-58);
- initializing said first table (see Column 2 Lines 59-60, where all bits are initialized to 0);
- during a first modification of a sector after said initialization, modifying the element of the first table corresponding to this sector (Column 2 Lines 60-61);
- not modifying an element of the first table during a modification of the sector that corresponds to it if the element has already been modified (see Figure 3 and Column 2 Lines 62-65, note how the bit remains a '1' if it is already '1'); and
- reinitializing said first table during the occurrence of a first predetermined event (Column 3 Lines 15-19).

Regarding Claim 3, Hilditch teaches all limitations of Claim 1, wherein reinitialization of said first table takes place during a complete backup of the storage unit

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(Column 3 Lines 8-19, note that an incremental backup that is performed once is a complete backup).

Regarding Claim 4, Hilditch teaches all limitations of Claim 1, wherein reinitialization takes place during an incremental backup of the storage unit (Column 3 Lines 8-19).

Regarding Claim 5, Hilditch teaches all limitations of Claim 1, wherein the process further comprises a stage consisting in creating and keeping a copy of said first table (the redo log mentioned in Column 2 Lines 65-66), and in reinitializing said copy during the occurrence of a second predetermined event (Column 3 Lines 30-32).

Regarding Claim 6, Hilditch teaches all limitations of Claim 5, wherein reinitialization of said copy takes place during a partial backup of the storage unit (Column 3 Lines 8-32, note that an incremental backup with two backup tables is a partial backup; the first being a complete backup and the second being the partial backup, also note how the log may be examined to determine which blocks have been updated since the last backup on Column 3 Lines 47-50).

Regarding Claim 13, Hilditch teaches all limitations of Claim 1, wherein said first table is created on said storage unit (Column 1 Lines 32-34, where inter-connecting network 11 is considered a storage unit).

Regarding Claim 15, Hilditch teaches a process for complete or incremental backup (see Column 3 Lines 8-19, where an incremental backup is described) of a digital storage unit divided into sectors, wherein the storage unit is managed by a process according to claim 1 as discussed above, comprising the steps of:

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-saving the indicated sectors as modified in said first table one after the other  
(Column 3 Lines 1-7); and

-reinitializing as the elements of said first table correspond to the saved sectors  
(Column 3 Lines 8-19).

Regarding Claim 16, Hilditch teaches a process for partial backup (see Column 3 Lines 46-48 where the changes since the last backup can be seen, and if there was only one other backup previously, this is a partial backup) of a digital storage unit divided into sectors, wherein the storage unit is managed by a process according to claim 5 as discussed above, comprising the steps of:

-saving the indicated sectors as modified in said first table one after the other  
(Column 3 Lines 1-7); and

-reinitializing as the elements of said first table correspond to the saved sectors  
(Column 3 Lines 8-19).

Regarding Claim 17, since Hilditch meets all limitations of Claim 1 as described above, there is inherently a controller of the digital storage unit arranged to implement the process according to Claim 1, because the system of Hilditch would not operate without some sort of controller (see Column 1 Lines 27-37 for a description of the system).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7 and 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hilditch in view of Garnett et al (US 6,785,763).

Regarding Claim 7, Hilditch teaches all limitations of Claim 1 as discussed above. However, Hilditch does not teach creation of a second table, each element of which corresponds to one group of sectors of the storage unit. Garnett teaches storing dirty bits hierarchically, such that multiple tables of dirty bits are created at the first level and groups farther up in the hierarchy indicate groups of bits that are dirty in the hierarchy beneath it (Figure 17 and Column 2 Lines 50-64 in Garnett). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to which the subject matter pertains to have created a table structure like the one described in Garnett and used the table for the sectors described by Hilditch, where the process further involves

- initializing the first table from Claim 1 (see Column 2 Lines 59-60 in Hilditch);
- during a first modification of one sector of a group of sectors after said initialization, modifying the element of the second table corresponding to this group of sectors (Column 2 Lines 50-55 in Garnett);
- not modifying an element of the second table during a modification of one sector of a group of sectors that corresponds to it if the element has already been modified (a dirty bit inherently is only modified if the data corresponding to the dirty bit has changed once);



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-reinitializing said second table during the occurrence of said first predetermined event (Column 3 Lines 15-19 in Hilditch, since this second table is included in the bit-file, it is reinitialized along with the first table). As motivation, Garnett states that the hierarchical "configuration of a dirty memory greatly enhances the access thereto for identifying parts of the main memory that have been dirtied" (Column 2 Lines 26-30 in Garnett). This second table will be considered part of the bit-file as described by Hilditch.

Regarding Claim 9, the combined device teaches all limitations of Claim 7 as mentioned above, wherein the reinitialization of said second table takes place during a complete backup of the storage unit (Column 3 Lines 8-19 in Hilditch, note that an incremental backup with one backup table is a complete backup).

Regarding Claim 10, the combined devices teaches all limitations of Claim 7, wherein reinitialization takes place during an incremental backup of the storage unit (Column 3 Lines 8-19 in Hilditch).

Regarding Claim 11, Hilditch teaches all limitations of Claim 7, wherein the process further comprises a stage consisting in creating and keeping a copy of said second table (the redo log mentioned in Column 2 Lines 65-66 in Hilditch), and in reinitializing said copy during the occurrence of a second predetermined event (Column 3 Lines 30-32 in Hilditch).

Regarding Claim 12, Hilditch teaches all limitations of Claim 11, wherein reinitialization of said copy takes place during a partial backup of the storage unit (Column 3 Lines 8-32, note that an incremental backup with two backup tables is a

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partial backup; the first being a complete backup and the second being the partial backup, also note how the log may be examined to determine which blocks have been updated since the last backup on Column 3 Lines 47-50).

Claims 2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hilditch and Garnett as applied to claim 8 above, and further in view of Leis. Hilditch and Garnett teach all limitations of Claim 1 and 7 as discussed above. However, neither Hilditch nor Garnett mentions when the tables are created and initialized. Leis teaches writing a header and data section for each sector when the disk is formatted (Column 2 Lines 53-61 in Leis). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to which the subject matter pertains to have included the bits indicating whether the sector and its corresponding level in the hierarchy have changed in this format information, and this information can then be presented as a table. As motivation, creating and initializing this information when the disk is formatted is the most obvious time to create and initialize these tables, since if it is done after the format, the disk may already have been written to and the tables will be inaccurate, as would have been well known in the art.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hilditch and Garnett as applied to Claim 7 above, and further in view of Tremblay et al (US 6,728,898). Hilditch and Garnett teach all limitations of Claim 7 as discussed above. However, Hilditch does not specify where the second table is created. Tremblay

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teaches storing a backup copy of a disk change bit map on the I/O Controller of the storage device (Column 5 Lines 45-48). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to which the subject matter pertains to have stored this second table described by Hildritch and Garnett on the controller as Tremblay describes. As motivation, if the original backup fails because of corrupted data, the original can be restored with the backup on the memory controller and the copy. Thus, by combining the devices, the system gains the additional benefit of being better able to tolerate corrupted data, as would have been well known in the art.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Grubbs (US 2003/0236956) teaches a way of storing point-in-time backups of a system using meta data and storing this meta data on a storage unit controller. Crockett (US 2002/0103980) teaches a method for tracking changes made to a first storage unit with a second storage unit. Ohran (US 5,835,953) teaches tracking changes made to a storage unit and storing these changes such that the system can be restored.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark A. Giardino whose telephone number is (571) 270-3565. The examiner can normally be reached on Monday-Thursday from 7:30 to 5:00. The examiner can also be reached on alternate Fridays from 7:30 to 4:00.

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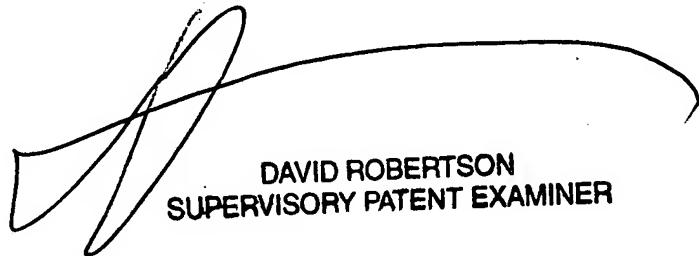
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Robertson, can be reached on Monday-Thursday from 7:30 to 5:00. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M. A. Giardino



10/16/2007



DAVID ROBERTSON  
SUPERVISORY PATENT EXAMINER